IN THE CLAIMS

1. (currently amended) A method to facilitate optimizing a winding and lamination configuration of an electric machine uses a computer including a microprocessor for executing computer functions, a database for storing optimization data, and a two-level optimization algorithm having a first optimization module and a second optimization module, said method comprises:

generating a plurality of data sets utilizing the first optimization module;

determining an optimum response surface based the data sets, utilizing the second optimization ~~module;~~module, wherein said determining the optimum response surface includes applying one of lamination geometry variable data and a set of winding parameters at a time different than a time at which the other of the lamination geometry variable data and the set of winding parameters is applied;

determining an optimum data set based on the optimum response surface, utilizing the first optimization module; and

outputting an optimum winding and lamination configuration based on the optimum data set.

2. (original) A method in accordance with Claim 1 wherein generating a plurality of data sets comprises generating a plurality of winding configurations utilizing at least one of winding parameters and motor level variables stored in the database.

3. (currently amended) A method ~~in accordance with Claim 2~~to facilitate optimizing a winding and lamination configuration of an electric machine uses a computer including a microprocessor for executing computer functions, a database for storing optimization data, and a two-level optimization algorithm having a first optimization module and a second optimization module, said method comprises:

generating a plurality of data sets utilizing the first optimization module, wherein generating the plurality of data sets comprises generating a plurality of

winding configurations utilizing at least one of winding parameters and motor level variables stored in the database;

determining an optimum response surface based the data sets, utilizing the second optimization module; wherein determining ~~an optimum~~the optimum response surface comprises:

determining at least one lamination geometry for each winding configuration ~~that will combine with each winding configuration~~ to satisfy a first set of performance constraints;

outputting each lamination geometry to the database; and

determining an optimum geometry response surface that satisfies a second set of performance constraints, based on the lamination ~~geometries.~~geometries;

determining an optimum data set based on the optimum response surface, utilizing the first optimization module; and

outputting an optimum winding and lamination configuration based on the optimum data set.

4. (original) A method in accordance with Claim 3 wherein determining an optimum data set comprises computing an optimum winding solution based on the optimum geometry response surface and predetermined manufacturing objectives.

5. (currently amended) A method in accordance with Claim 4 wherein outputting ~~an optimum~~the optimum winding and lamination configuration comprises:

outputting ~~an optimum~~the optimum winding and lamination configuration based on the optimum winding solution, and

outputting cost and performance values corresponding to the optimum winding and lamination configuration.

6 (original) A method in accordance with Claim 1 wherein generating a plurality of data sets comprises generating a plurality of lamination geometries that

satisfy a first set of performance constraints, wherein the plurality of lamination geometries are selected from standard manufactured lamination geometries stored in the database.

7. (currently amended) A method in accordance with Claim 6 wherein determining an optimum response surface comprises:

utilizing the winding parameters and motor level variables stored in the database to determine at least one winding configuration for each generated lamination geometry that will combine with the lamination geometry to satisfy a second set of performance constraints;

outputting each winding configuration to the database; and

determining an optimum winding response surface.

8. (original) A method in accordance with Claim 7 wherein determining an optimum data set comprises computing an optimum lamination solution based on the optimum winding response surface and predetermined manufacturing objectives.

9. (currently amended) A method in accordance with Claim 8 wherein outputting ~~an optimum~~the optimum winding and lamination configuration comprises:

outputting ~~an optimum~~the optimum winding and lamination configuration based on the optimum lamination solution, and

outputting cost and performance values corresponding to the optimum winding and lamination configuration.

10. (currently amended) A system to facilitate optimizing a winding and lamination configuration of an electric machine, said system comprising a computer, said computer comprising:

a microprocessor for executing computer functions;

a database coupled to said microprocessor for storing data; and

a two-level optimization algorithm comprising a first optimization module and a second optimization module, said two-level optimization algorithm using data stored in said database and executed by said ~~microprocessor.~~microprocessor, said first optimization module configured to apply one of lamination geometry variable data and a set of winding parameters at a time different than a time at which the other of the lamination geometry variable data and the set of winding parameters is applied.

11. (original) A system in accordance with Claim 10 wherein said first optimization module is a winding optimization module, said computer programmed to utilize said winding optimization module to generate a plurality of winding configurations, said winding optimization module utilizing at least one of winding parameters and motor level variables stored in said database.

12. (currently amended) A system in accordance with Claim 11 wherein said second optimization module is a lamination optimization module, said computer further programmed to utilize said lamination optimization module to determine at least one lamination geometry for each winding configuration ~~that will combine with the winding configuration~~ to satisfy a first set of performance constraints.

13. (currently amended) A system ~~in accordance with Claim 12~~to facilitate optimizing a winding and lamination configuration of an electric machine, said system comprising a computer, said computer comprising:

a microprocessor for executing computer functions;

a database coupled to said microprocessor for storing data; and

a two-level optimization algorithm comprising a first optimization module and a second optimization module, said two-level optimization algorithm using data stored in said database and executed by said microprocessor, wherein said first optimization module is a winding optimization module, said computer programmed to utilize said winding optimization module to generate a plurality of winding configurations, said winding optimization module utilizing at least one of winding parameters and motor level variables stored in said database, said second optimization module is a lamination optimization module, said computer further programmed to utilize said lamination optimization module to determine at least one lamination

geometry for each winding configuration to satisfy a first set of performance constraints, and wherein said computer further programmed to utilize said lamination optimization module to generate an optimum geometry response surface based on the lamination geometry, the optimum geometry response surface satisfying a second set of performance constraints.

14. (original) A system in accordance with Claim 13 wherein said computer further programmed to utilize said winding optimization module to generate an optimum winding solution based on the optimum geometry response surface and predetermined manufacturing objectives.

15. (original) A system in accordance with Claim 14 wherein said computer further programmed to output an optimum winding and lamination configuration based on the optimum winding solution, and to output cost and performance values corresponding to the optimum winding and lamination configuration.

16. (currently amended) A system in accordance with Claim 10 wherein said first optimization module is a lamination optimization module, said computer programmed to utilize said lamination optimization module to generate a plurality of lamination geometries that satisfy a first set of performance constraints, and the plurality of lamination geometries selected from a set of standard manufactured lamination geometries stored in said database.

17. (currently amended) A system in accordance with Claim 16 wherein said second optimization module is a winding optimization module, said computer further configured to utilize the winding parameters and motor level variables stored in said database to determine at least one winding configuration for each generated lamination geometry that will combine with the generated lamination geometry to satisfy a second set of performance constraints.

18. (original) A system in accordance with Claim 17 wherein said computer further configured to utilize said winding optimization module to generate an optimum winding response surface based on the winding configurations.

19. (original) A system in accordance with Claim 18 wherein said computer further configured to utilize said lamination optimization module to generate an optimum lamination solution based on the optimum winding response surface and predetermined manufacturing objectives.

20. (original) A system in accordance with Claim 19 wherein said computer further configured to output an optimum winding and lamination configuration based on the optimum lamination solution, and to output cost performance values corresponding to the optimum winding and lamination configuration.

21. (currently amended) A two-level optimization algorithm to facilitate optimizing a winding and lamination configuration of an electric machine ~~comprising;~~comprising:

a first optimization module; and

a second optimization module;

wherein said first optimization module configured to generate a first optimization solution based on output from said second optimization module and said second optimization configured to generate a second optimization solution based on output from said first optimization module, said two-level optimization algorithm configured to generate a global optimization solution based on the first and second optimization ~~solutions.~~solutions, said first optimization module configured to apply one of lamination geometry variable data and a set of winding parameters at a time different than a time at which the other of the lamination geometry variable data and the set of winding parameters is applied.

22. (original) An algorithm in accordance with Claim 21 wherein said first optimization module is a winding optimization module configured to generate a plurality of winding configurations utilizing at least one of winding parameters and motor level variable stored in a database.

23. (currently amended) An algorithm in accordance with Claim 22 wherein said second optimization module is a lamination optimization module

configured to generate at least one lamination geometry for each winding configuration ~~that will combine with the winding configuration~~ to satisfy a first set of performance constraints.

24. (currently amended) ~~An algorithm in accordance with Claim 23~~A two-level optimization algorithm to facilitate optimizing a winding and lamination configuration of an electric machine comprising:

a first optimization module;

a second optimization module;

wherein said first optimization module configured to generate a first optimization solution based on output from said second optimization module and said second optimization configured to generate a second optimization solution based on output from said first optimization module, said two-level optimization algorithm configured to generate a global optimization solution based on the first and second optimization solutions, wherein said first optimization module is a winding optimization module configured to generate a plurality of winding configurations utilizing at least one of winding parameters and motor level variable stored in a database, wherein said second optimization module is a lamination optimization module configured to generate at least one lamination geometry for each winding configuration to satisfy a first set of performance constraints, and wherein said lamination optimization module further configured to generate an optimum geometry response surface based on the lamination geometry, the optimum geometry response surface satisfying a second set of performance constraints.

25. (original) An algorithm in accordance with Claim 24 wherein said winding optimization module further configured to generate an optimum winding solution based on the optimum geometry response surface and predetermined manufacturing objectives.

26. (currently amended) An algorithm in accordance with Claim 25 wherein the global optimization solution is ~~an optimum~~the optimum winding and lamination configuration based on the optimum winding solution, said two-level

optimization algorithm further configured to output cost and performance values corresponding to the optimum winding and lamination configuration.

27. (original) An algorithm in accordance with Claim 21 wherein said first optimization module is a lamination optimization module configured to generate a plurality of lamination geometries that satisfy a first set of performance constraints, the plurality of lamination geometries selected from standard manufactured lamination geometries stored in said database.

28. (currently amended) An algorithm in accordance with Claim 27 wherein said second optimization module is a winding optimization module configured to utilize the winding parameters and motor level variables stored in a database to determine at least one winding configuration for each generated lamination geometry that will combine with the generated lamination geometry to satisfy a second set of performance constraints.

29. (original) An algorithm in accordance with Claim 28 wherein said winding optimization module further configured to generate an optimum winding response surface based on the winding configurations.

30. (original) An algorithm in accordance with Claim 29 wherein said lamination optimization module further configured to generate an optimum lamination solution based on the optimum winding response surface and predetermined manufacturing objectives.

31. (original) An algorithm in accordance with Claim 30 wherein the global optimization solution is an optimum winding and lamination configuration based on the optimum lamination solution, the two-level optimization solution further configured to output cost performance values corresponding to the optimum winding and lamination configuration.